



Decommissioning News.

A newsletter to inform the public about NASA's Decommissioning Activities.

TWENTY-SIXTH EDITION JULY 2009.

Project Update. NASA Digs In and Cleans Up.



Clean soil. It sounds like an oxymoron – think jumbo shrimp – but it's true. The cleaner the soil being excavated from areas in and around the Plum Brook Reactor Facility (PBRF), the closer NASA gets to completing the Decommissioning Project. After clearing an

area of brush just south of the PBRF fence line this past winter and spring, NASA contractor Clauss Construction created a "soil lay-down area." This pad of land now holds separated piles of excavated soil, totaling more than 100 million pounds, much of it from Pentolite Ditch. When the reactor operated, Pentolite Ditch was the permitted pathway for the discharge of water into Plum Brook.

In July, NASA began operating a Soil Assay System. Consisting of several conveyor belts, machinery and radiation monitoring equipment, the system determines how much soil will be clean enough to stay on site (to be used as fill) – and what must be disposed of as low-level radioactive waste. According to NASA Decommissioning Program Manager Keith Peacock, NASA will retain soil with minimal cesium content, 6 picocuries per gram (pCi/gm) just half of the Derived Concentration Guideline Level (DCGL), the Decommissioning Project cleanup level.

Peacock expects up to 90% of the soil being run through the system to be clean. "We've taken great care to separate the soil piles, based on the results of radiation readings taken in the field before digging begins," observed Peacock, who is working closely with



the U.S. Nuclear Regulatory Commission (NRC).

"The NRC is very strong on making sure there is no intentional blending of soil simply to be able to leave it on site," he noted. "There's a very large pile we expect to be clean (less than half the DCGL) and a much smaller pile (above the DCGL)" to be shipped. He added that a third pile, with levels between 6 and 12 pCi/gm, can also be run through the system. Soil that is less than half the DCGL will go into the clean pile and remain on site, while the remaining soil can be combined with soil being shipped off site, to achieve an average activity level below 25 pCi/gm.

The soil with blended levels below 25 pCi/gm, will be sent to IMPACT Services, a Tennessee waste processor, for safe disposal. Soil which remains above this level (expected to be about 1% of all excavated soil) will be sent to the Energy Solutions disposal facility in Utah. All shipments will be made by truck, starting next month. According to Peacock, "The (radiation) levels are so low that trucks will not need to display the placard," standard on radioactive shipments. As always, NASA will notify local emergency responders in advance of all the shipments. Peacock said NASA's goal is to complete soil excavation and assay by late autumn. He praised Clauss for "re-engineering its plans and making one digging season possible," saving NASA in excess of \$1million.



To prepare for excavating Pentolite Ditch, workers installed a water diversion system. They installed a half-mile long bypass line for Pentolite Ditch. It serves as the diversion path for water that normally flowed down the ditch, which was dried out for excavation. They also constructed several earthen dams to ensure the ditch remains dry during both excavation and the Final Status Survey (FSS) to be conducted on soil remaining in the ditch (see page 2).

Project Update article photos.

- In the photo in the upper left, A backhoe scoops up soil for truck transport to the soil laydown and assay area.
- In the photo in the bottom left, The Soil Assay System, with conveyor belts to the left and right, is now in use.
- In the photo to the right, This spring, workers installed piping (in foreground) for a water diversion system near Pentolite Ditch.

CONTINUED ON PAGE 4.

page two.

OTHER WAYS TO RECEIVE DECOMMISSIONING Information.

Decommissioning Website.

For project updates,
fact sheets, newsletters,
and to ask questions,
visit us at
www.grc.nasa.gov/WWW/pbrf

24-Hour Toll-Free Information Line.

For recorded project
updates and to ask
questions, call
1-800-260-3838

Community Information Bank.

To review documents, visit the
Decommissioning Project
information repository at the
BGSU Firelands Library.

Speakers.

To arrange for a NASA
representative to make
presentations to civic,
community and school
organizations, contact
Sally Harrington
NASA Public Affairs Specialist
216-433-2037, or
email
Sally.V.Harrington@nasa.gov
or call 1-800-260-3838.

Final Status Survey Field Work Shows the Way to Project Completion.

It has been described as the Decommissioning Project's "finished product." It covers the 27 acres of the Plum Brook Reactor Facility (PBRF) buildings and grounds as well as areas adjacent to PBRF (including Pentolite Ditch and other Plum Brook Station areas). It involves specially trained personnel using sophisticated radiation detection instruments. The Final Status Survey (FSS) shows the way to completion of the Decommissioning Project and termination of NASA's reactor license with the U.S. Nuclear Regulatory Commission (NRC). FSS field work is now well underway in nearly every PBRF structure and on millions of pounds of excavated soil.

Since June, work has focused on areas south of PBRF, from which soil has been excavated. According to NASA Radiation Safety Officer Bill Stoner, the FSS process actually starts with decontamination (remediation), conducted by NASA project contractor Clauss Construction. After workers complete cleanup of an area, they conduct a Post Remediation Survey, similar to an FSS, but usually not as extensive. Remediated areas are double and triple checked to ensure cleanup levels have been achieved. Stoner said, "It is very important to verify site areas have been remediated below cleanup levels before the FSS begins. If an FSS fails, additional remediation must be performed and the entire FSS must be repeated. This leads to schedule delays and additional costs."

SIDE BAR. The FSS is the final test to demonstrate that NASA has achieved its project cleanup levels, known as Derived Concentration Guideline Levels (DCGLs). NASA must successfully reduce residual radioactivity below the NRC site release criteria of less than 25 millirem per year and as low as reasonably achievable (ALARA). Successful cleanup meeting these criteria will allow unrestricted use of the site. NASA submitted an initial FSS Plan to the U.S. Nuclear Regulatory Commission (NRC) in December 2004, defining the cleanup levels and radiological survey requirements and objectives. The plan was approved in 2007.

For the FSS, PBRF and surrounding areas are classified as Impacted and Non-Impacted. Stoner said the latter are areas "having no reasonable potential for residual contamination because there was no known impact from site operations." On the other hand, impacted areas may contain residual radioactivity as a result of activities undertaken when the reactor was operational. Based on residual levels, impacted areas are further divided into Class 1, 2 or 3 areas. The FSS also covers Open Land areas outside the PBRF fence line, as well as Pentolite Ditch and Plum Brook.

Class 1 areas are those which, prior to remediation, had potential for radioactive contamination, based on the area's operating history – or known contamination, based on previous radiation surveys that showed them above DCGLs. They include parts of the Containment Vessel and Hot Lab. In Class 1 areas, Stoner observed, "We use radiation detectors to scan 100 percent of Class 1 surfaces."

Class 2 areas are ones which had, prior to remediation, potential for contamination but are not expected to exceed DCGLs. These include the upper walls and ceilings of buildings or rooms subject to airborne radioactivity and areas that once contained low concentrations of radioactive materials. Class 3 areas are those not expected to contain residual radioactivity – or have any levels close to DCGL's – based on previous radiation surveys. According to Stoner, Class 3 areas often serve as buffer zones around Class 1 and 2 areas. "Buffering is important," he stated. "Some level of radiological surveying should always be performed outside Class 1 areas to verify spill areas have been fully bounded and radiological conditions are known."

To carry out FSS work, the PBRF site is divided into Survey Areas, which in turn are divided into smaller "Survey Units." Each consists of a structure or land area of specified size and shape, which has similar physical characteristics and the potential for consistent levels of residual radioactivity. Depending on whether an area is Class, 1, 2 or 3, there are different sized survey areas (see chart).

Stoner explained that "Class 1 areas receive the highest degree of surveying and sampling as the contamination potential is highest." Less surveying and sampling is performed in Class 2 and 3 as the contamination potential is much lower. For example, approximately 50% of Class 2 and 10% of Class 3 surfaces are scanned, using a radiation detector, versus 100% for Class 1 areas. If radiological contamination is detected above defined action levels within a Class 2 or 3 area, scan coverage is increased and an investigation performed and documented. An area classification may be increased to a higher level based on results of the investigation. Depending on the levels of contamination, remediation may be required. Based on the progress NASA is making, Stoner said "We're on track to complete the FSS work and terminate our NRC license by early 2011." ■

Below is a chart pertaining to Final Status Survey Field work article above.

SURVEY UNIT SIZES.		
Class.	Structures.	Land.
1.	up to 75 square meters.	up to 2,000 square meters.
2.	up to 1,000 square meters.	up to 10,000 square meters.
3.	up to 10,000 square meters.	up to 100,000 square meters.

page three.

Plum Brook Station Looks to Develop Wind Farm.

Sometimes a good idea can be recycled. More than 30 years ago, NASA Glenn was the agency leader in wind power experimentation. In 1975, a wind turbine began operating at Plum Brook Station (PBS). Two years later, the Mod-O wind turbine became NASA's first multi-megawatt turbine. Today, as the nation looks to move away from its dependence on fossil fuels, wind power is viewed as a viable renewable energy source; and PBS may become the site of an extensive wind farm and unique private-public sector partnership.

Federal Executive Order 13423, part of the Energy Policy Act of 2005, calls for a graduated increase in the amount of electrical energy NASA uses from renewable sources. According to Wind Farm Project Manager Bob Puzak, NASA currently meets the 2009 goal of 3%. He said renewable sources can be either purchased from utilities or produced on site. The Executive Order (EO) allows for double credit if the renewable energy is produced on site. If a federal site produces one Megawatt (MW) on site, the EO gives a 2 MW credit. Therefore, Puzak noted, "A large wind farm at PBS would enable NASA to meet the EO's 2013 requirements of 7.5%."

NASA is taking several steps to see if the wind farm can become a reality. "We have currently identified as much as 2000 acres, for producing alternative energy," said Puzak. "We're looking to offer land to an outside developer to own, operate and maintain it, in return for our getting to use some of the (generated) power." In May, NASA sent out a Request for Information (RFI), to determine the interest of developers and received 10 responses - all of them favorable.

The wind farm would be located in the central and northern sections of PBS, depending on the results of several studies NASA is conducting (see chart). NASA hopes to develop a Request for Proposal (RFP) by late this fall or early winter, after the studies are completed. Puzak said NASA is also considering an on-site Industry Day this summer, to "give developers a chance to talk with us and learn more about the project." The target date depends on the responses. This project is one more example of the interest that area business and political leaders have in further utilizing the land and facilities at PBS, and is indicative of a promising future. ■

Below is a chart pertaining to Plum Brook Station Wind Farm article above.

STUDY.	PURPOSE.
Environmental Assessment.	Examine potential impacts to wildlife, noise, electromagnetic interferences and other factors. It would include a public comment period sometime this fall.
Encroachment Study.	Review any interference with potential runway development under consideration at PBS.
Additional Wind Monitoring.	Continue 18-month study of PBS wind conditions.
Electrical Grid Study.	Review feasibility of tying electricity produced from the wind farm into the local grid system.

Join NASA for our final
COMMUNITY INFORMATION SESSION.
Wednesday, October 21.
7 p.m. - 9 p.m.
Sandusky High School cafeteria.
2130 Hayes Avenue, Sandusky.
ALL ARE WELCOME.

A Community Workgroup meeting will be held just before the
Community Information Session, from 5:30 p.m. to 6:45 p.m.
This meeting is also open to the public.

COMMUNITY WORKGROUP MEMBER PROFILE.



Tom Surdyk.

It was 1974 when he looked at the job listings in the Slippery Rock State (PA) College placement office. The Sandusky City Schools were "the first to offer me a job," says Tom Surdyk. "I never intended to stick around," he recalled. "Ohio was too flat" for a Pittsburgh native used to hills. But the year he planned to spend in Sandusky turned into 30 as he taught science at both Sandusky High School (SHS) and Jackson Junior High, before retiring in 2004.

Teaching at SHS gave Surdyk, a Workgroup member since 2007, a chance to go to school with his daughters. Alicia (Class of '02), recently graduated from New York Law School and Michelle ('05) just did the same from Boston University. As a science teacher, he had a natural curiosity about NASA and had visited Plum Brook Station on several occasions. Alicia was also curious about NASA, which led to a meeting with "a Plum Brook engineer" and subsequently an internship working on a NASA project at Georgia Tech University.

The Huron resident knew about Decommissioning "through the newspapers," knowledge enhanced in 2003 by his work as SHS junior class faculty advisor when Michelle was vice president. That year, NASA held its annual Community Information Session (CIS) at SHS (where it returns on Wednesday, October 21, 7-9 p.m.) and recruited class officers to stamp and label that month's edition of *Decommissioning News*. Surdyk attended the CIS and subsequent Workgroup meetings. He said before joining the Workgroup, he had concerns about "transportation of radioactive materials, safety of workers and possible leaks," but he noticed that NASA answered all questions the attendees asked. As a Workgroup member, he added, "you find out more details and can ask more specific questions."

As a long-time educator, Surdyk believes NASA can better inspire students by offering more interactive exhibits, something he experienced leading field trips to the COSI Science Centers in Columbus and (formerly) Toledo. He suggested NASA "put a moon rock in their hands.... or a suit an astronaut wore into space."

With decommissioning in the home stretch, Surdyk still views Workgroup meetings as an important communications vehicle. He likens the project now to "building a house," observing "At the end there are many little projects to finish. You want to end on a good note and make the whole house shine." ■

page four.

NASA DIGS IN AND CLEANS UP (CONTINUED FROM PAGE 1).

This spring NASA also began removing a storm drain system installed a half-century ago. It was located throughout the site, consisting of 6,500 feet of corrugated steel and concrete piping, buried three feet underground. The soil from above and around the pipes was removed and placed in the appropriate pile for assay, most of it in the clean pile. The soil under the piping passed the FSS, assuring it met project cleanup levels. The piping itself is being size reduced and disposed of as low level waste.



Decontamination and Survey Work Continues.

While soil work has taken center stage, NASA has also completed decontamination work on several PBRF buildings and structures. During winter and early spring, workers completed decontamination of small amounts of radiation found in concrete floor cracks in the Hot Pipe Tunnel, Waste Handling Building and Hot Retention Area. The latter held eight 60,000-gallon tanks for storing contaminated water when the reactor was operational, until radiation levels had been reduced to transfer the water to the Cold Retention Area (CRA). "We chased the cracks," noted Peecook, using excavating equipment to remove concrete. Workers then conducted the FSS to make sure the underlying soil was clean. They also covered the soil with grout, a cement-like substance, to prevent any groundwater intrusion.

Workers also prepared the CRA for FSS work. This area consisted of two 500,000-gallon concrete basins, each under a metal roof, which once held lightly contaminated water from reactor operations. They removed the roofs, and size-reduce them, then demolished and packaged the concrete. Workers also removed a limited amount of contaminated soil from under them, and conducted post-remediation surveys.

Meanwhile, decontamination and FSS prep work continues in the two largest PBRF buildings, the Containment Vessel and the Hot Lab. Peecook is pleased with the progress NASA is making both indoors and out. He observed "We're having a productive summer, finding ways to use our resources more efficiently." Looking ahead, he added, "We're getting as much outdoor work done as we can. You might say we're saving the indoor work for a rainy day." ■

Project Update article photos.

■ In the photos in the upper right, **Before & After** The photo to the left shows the metal roofs of the Cold Retention Basins. The photo to the right shows the roofs after they had been demolished by construction equipment. The underlying concrete basins were also demolished and surveyed.

SAVE THE DATE.
Wednesday, October 21.
7 p.m. - 9 p.m.
Community Information Session.
Sandusky High School cafeteria.
2130 Hayes Avenue - Sandusky.
(Workgroup meeting at 5:30 p.m. also open to public).